

Solder Temp (°C)	Wetting Time (Sec)									
	63Sn37Pb	99.3Sn0.7Cu	96.5Sn3.5Ag	ALLOY 349	Viromet 217	Viromet 411	Viromet 513	96.5Sn3.5Ag3.0Bi	96.5Sn4.0Ag0.5Cu	96.5Sn2.5Ag1.0Bi0.5Cu
235	0.767	1.411	2.189	1.156	0.949	1.036	1.758	3.173	3.388	1.86
245	0.606	1.034	1.382	0.716	0.791	0.869	1.072	1.669	1.946	1.235
255	0.546	0.682	1.05	0.544	0.559	0.587	0.822	0.814	1.284	0.824
265	0.46	0.165	0.74	0.244	0.476	0.466	0.597	0.653	1.048	0.658

FIGURE 1

Wetting time with different temperature

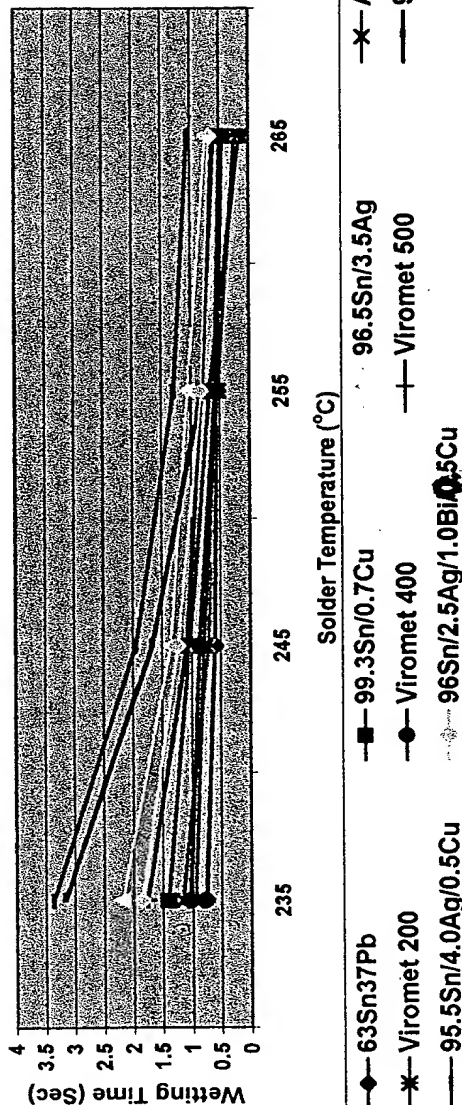


FIGURE 2

Solder Temp (°C)	Maximum wetting force at 2.0s (mN)									
	63Sn37Pb	99.3Sn0.7Cu	96.5Sn3.5Ag	ALLOY 349	Viromet 217	Viromet 411	Viromet 513	96.5Sn3.5Ag3.0Bi	96.5Sn4.0Ag0.5Cu	96.5Sn2.5Ag1.0Bi0.5Cu
235	5.48	4.37	2.54	3.21	5.38	3.25	1.27	1.03	1.07	3.47
245	5.54	4.93	4.74	4.82	5.57	3.85	3.94	3.91	3.13	4.8
255	5.42	5.4	5.16	4.9	5.76	4.55	3.58	4.95	4.86	5.48
265	5.41	5.77	5.34	5.07	5.49	4.89	4.67	5.37	4.73	5.49

FIGURE 3

Maximum wetting force at 2.0s

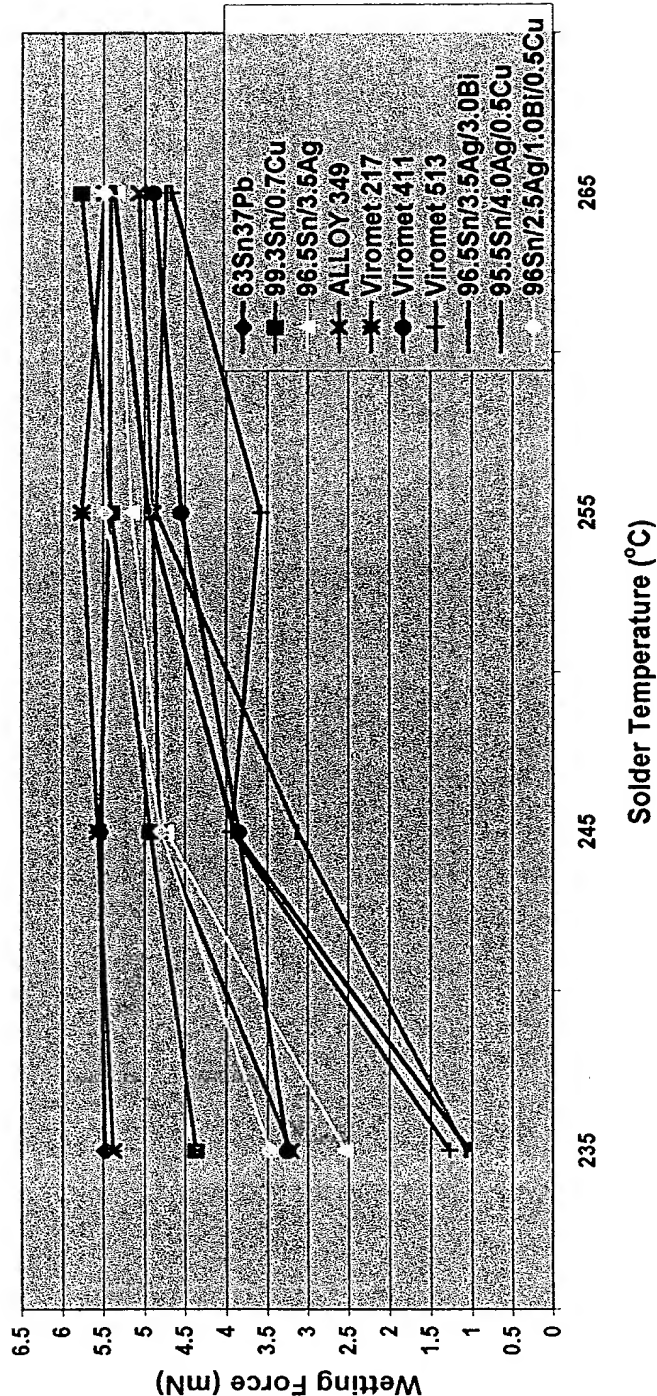


FIGURE 4

Properties	Type of alloys									
	63Sn/37Pb	99.3Sn/0.7Cu	96.5Sn/3.5Ag	Viromet 217	ALLOY 349	Viromet HF	96.5Sn/3.5Ag/3Bi	96.5Sn/4Ag/0.5Cu	96Sn/2.5Ag/0.5Cu/1Bi	
Melting Temp.(°C)	183	227	221	199-209	205-210	203-215	195-215	194-218	196-218	
CTE(um/m°C)	23.3	19.3	22.7	22.5	22.9	18.6	23.1	21.5	14.5	
SG(g/m)	8.4	7.31	7.38	7.34	7.4	7.3	7.22	7.4	7.38	

FIGURE 5

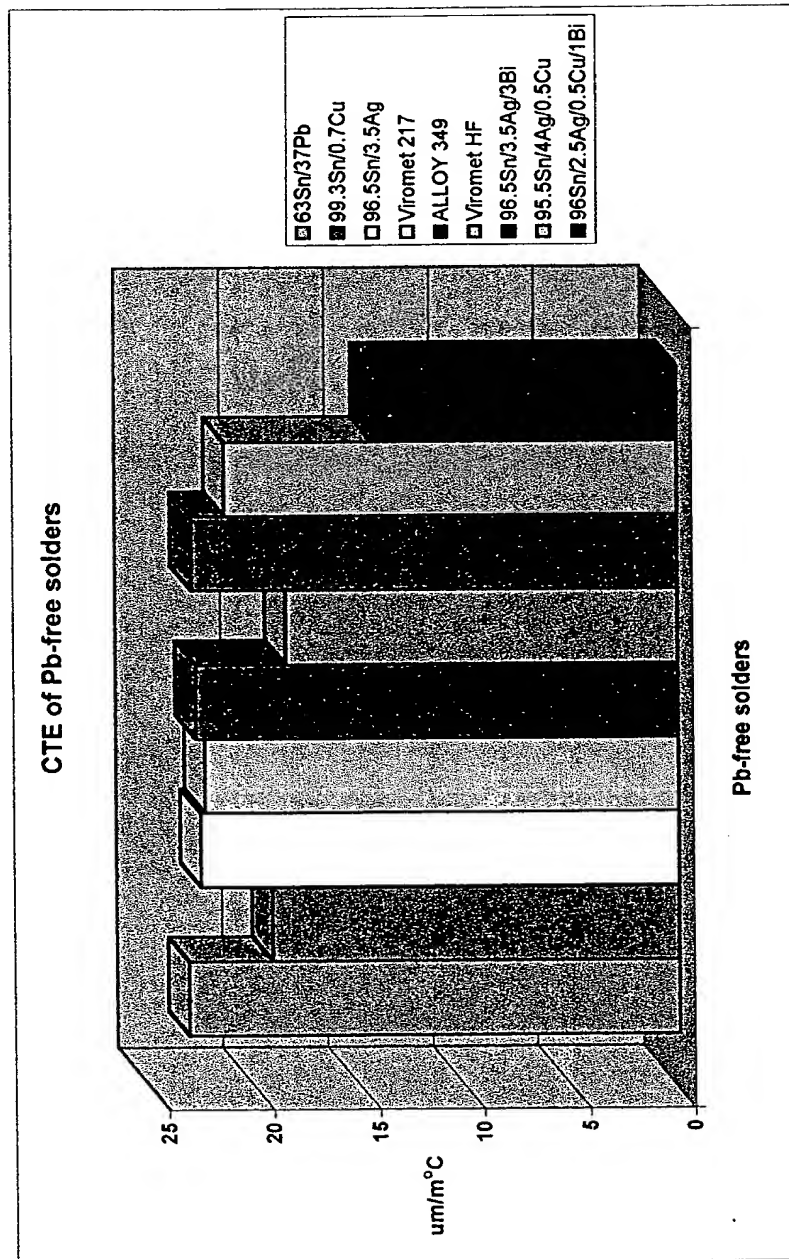


FIGURE 6

Properties	Type of alloys							
	63Sn37Pb	99.3Sn0.7Cu	96.5Sn3.5Ag	96.5Sn3.5Ag	96.5Sn3.5Ag3Bi	96.5Sn3.5Ag3Bi	96.5Sn3.5Ag3Bi	96.5Sn3.5Ag3Bi
Tensile Strength	48.37	39.76	55.15	68.23	68.06	84.79	49.55	63.11
Load at max load	1.37	1.12	1.56	2.71	1.92	2.4	1.4	1.78
Yield Strength	39.53	32.79	46.39	70.55	53.89	62.34	38.28	49.26
(at 2% offset)								
Young Modulus	4958.91	10111.55	11437.11	11393.76	10892.66	9958.52	11395.93	11403.57

FIGURE 7

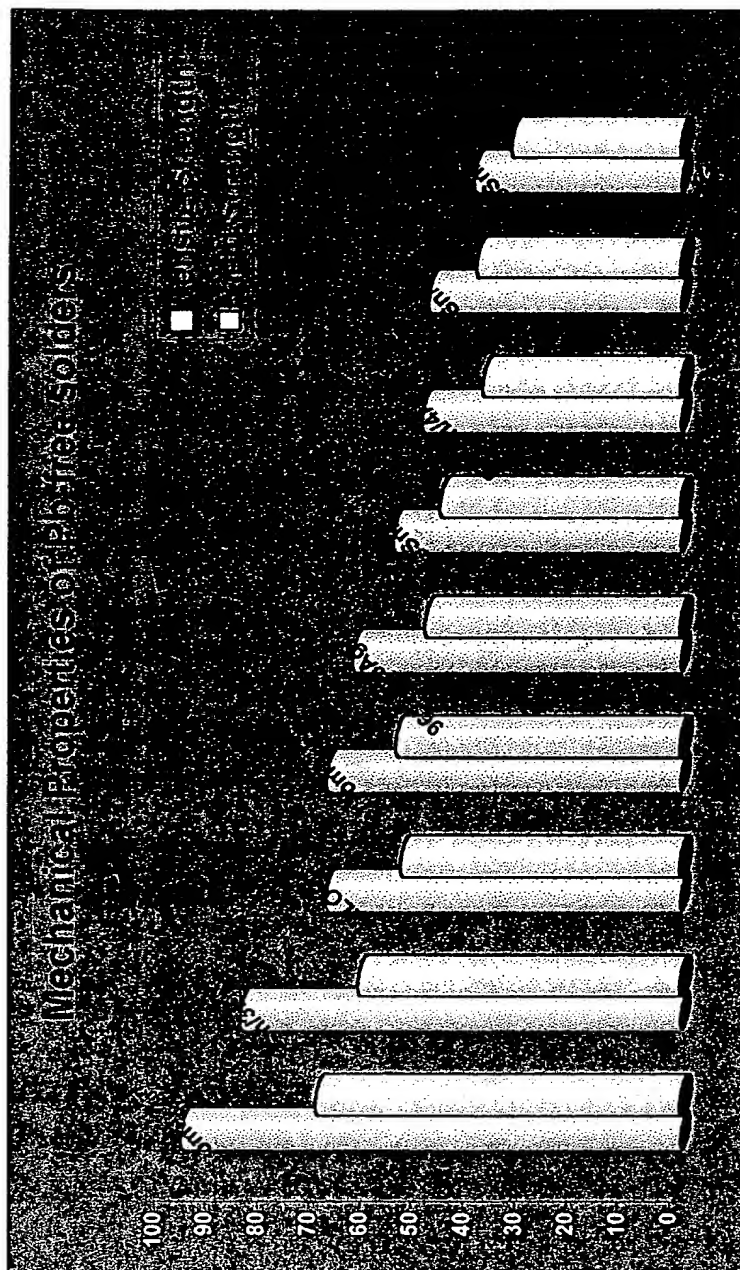


FIGURE 8

Type of Solder	Conc of copper (% by weight)	Dissolution rate of copper
Viromet 349	0.06312	0.0118406
Viromet 217	0.05506	0.0112433
Sn/Cu0.7	0.16017	0.0320858
Sn/Ag/Cu	0.13221	0.0264772
Sn63/Pb37	0.02279	0.0045627

FIGURE 11

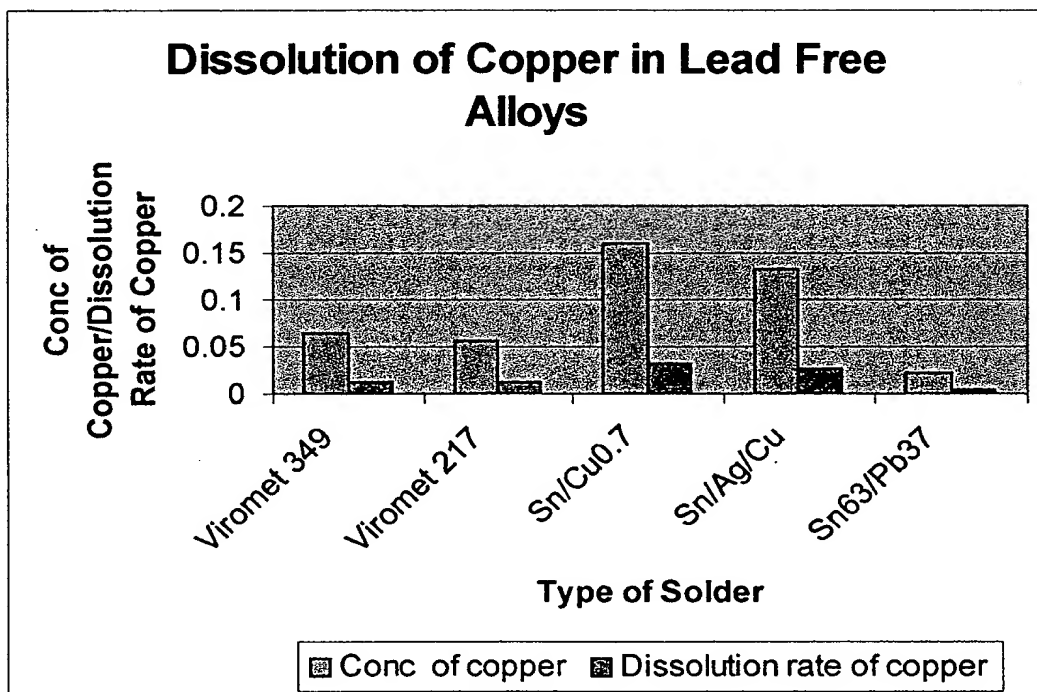


FIGURE 12

Solder Alloy	1	2	3	4	Total (g/h)
Sn63/37	6.55	6.80	7.05	6.80	27.2
Viromet 217	3.8	5.50	5.60	6.90	21.80
Viromet 349	7.20	6.41	5.45	5.88	24.94
Sn/Cu0.7	10.36	10.71	10.70	10.10	41.87
Sn/Ag/Cu	13.95	10.95	10.50	12.85	48.06

FIGURE 13